

WE CLAIM:

1. A protein derived from an enterically transmitted non-A/non-B viral hepatitis agent whose genome contains a region which is homologous to a coding region of the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4 and having ATCC deposit no. 67717.

10 2. The protein of claim 1, which is encoded by a complete coding region within said 1.33 kb EcoRI insert.

15 3. A recombinant protein derived from an enterically transmitted nonA/nonB viral hepatitis agent whose genome contains a region which is homologous to a coding region of a DNA molecule having a first sequence (SEQ ID NO.1):

20	AGACCTGTCC CTGTTGCAGC TGTCTACCA CCTGCCCG AGCTGAACA GGGCCTCTC	60
	TACCTGCCCG AGGAGCTCAC CACCTGTGAT ATGTGCGTAA CATTGAATT AACAGACATT	120
	GTGCACTGCC GCATGGCCGC CCCGAGCCAG CCGAGGCCG TGCTGTCCAC ACTCGTGGC	180
25	CGCTACGGCG GTGGCACAAA GCTCTACAAAT GCTTCCACT CTGATGTTG CGACTCTCTC	240
	GCCCCTTTA TCCCAGCCAT TGGCCCGA CAGGTTACAA CTTGTGAATT GTACGAGCTA	300
	GTGGAGGCCA TGGTCGAGAA GGCCAGGAT GGCTCCCG TGCTTGAGCT TGATCTTG	360
30	AACCGTGACG TGTCCAGGAT CACCTTCTTC CAGAAAGATT GTAACAAGTT CACCACAGGT	420
	GAGACCATTG CCCATGGTAA AGTGGGCCAG GGATCTCGG CCTGGAGCAA GACCTCTGC	480
35	GCCCTTTG GCCCTTGGT CGCGCTATT GAGAAGGCTA TTCTGGCCCT GCTCCCTCAG	540
	GGTGTGTTT ACGGTGATGC CTTGATGAC ACCGTCTCT CGCGGGCTGT GGCGCAGCA	600
	AAGGCATCCA TGGTGTGTTGA GAATGACTTT TCTGAGTTG ACTCCACCCA GAATAACTTT	660
40	TCTCTGGTC TAGAGTGTGC TATTATGGAG GAGTGTGGGA TGCCGAGTG GCTCATCCGC	720
	CTGTATCACC TTATAAGGTC TGGTGGATC TTGCAAGGCC CGAAGGAGTC TCTGCGAGGG	780
45	TTTGGAAAGA AACACTCCGG TGAGCCCGC ACTCTTCTAT GGAATACTGT CTGGAATATG	840
	GCCGTTATTA CCCACTGTTA TGACTTCCGC GATTTCAAGG TGGCTGCCTT TAAAGGTGAT	900

	GATTCGATAG	TGCTTTGGAG	TGATGATGTT	TAGAGTCAG	TAGCTGCTGT	CCTGATGCC	960
5	GGCTGTGGCT	TGAAGTTGAA	GCTAGATTTG	CGCCCGATCG	TTTGTATGC	AGGTGTTGTG	1020
	GTGGCCCCCG	GCCTTGCGGC	GCCTCGATAT	TTTGTGCGCT	TGCCCCGCCG	GCTTACCGAG	1080
10	AAGAAATTGGG	GCCTTGCGGC	TGAGGGGGCG	GAGCAGCTCG	GCCTCGCTGT	TAGTGATTTC	1140
	CTCCGCAAGG	TCACGAAATGT	AGCTTACATG	TGTTGCGATG	TTGTTTCCCG	TGTTTATGGG	1200
15	GTTTCCCGTG	GAATCGTTCA	TAACCTGATT	GGCATGCTAC	AGGCTGTTGC	TGATGGCAAG	1260
	GCACATTTCA	CTGAGTCAGT	AAAACCGATG	CTCGA			1295
a second sequence (SEQ ID NO.5) :							
	TCGAGCACTG	TTTTTACTGA	CTCAGTGAAG	TGTGCGTTGC	CATCAGCAAC	AGCCTGTAGC	60
20	ATGCCAATCA	GGTTATGAAC	GASTCCAGGG	GAAACCCCAT	AAACACGGGA	AACAACATCC	120
	ACACACATCT	GAGCTACATT	CGTGAGCTTG	CGGAGGAAAT	CACTAACAGC	GAGGCGGAGC	180
25	TGCTCCGCCG	GCTCAGGGCC	AGGGCCCCAA	TTCTTCTCGG	TAAGCCGGCC	GGCGAAGCGC	240
	ACAACATCG	GGAGCGCGCC	AAGGCCGGGG	GCCACCAAA	CACCTGCATA	CAAACCGATC	300
30	GGGCGGAAAT	CTACCTTCAA	CTTCAAGCCA	CAGCCGGCGA	TCAGGACAGC	AGCTCCTGGA	360
	CTCTGACGAT	ACTCACTGCA	AAGCACTATC	GAATCATCAC	CTTTAAAGGC	AGCCACCTGA	420
35	AAATCGCGGA	AGTCATAACA	GTGGTAATA	ACGGCCATAT	TCCAGACAGT	ATTCCATAGA	480
	AGAGTGCCGG	GCTCACCGGA	GTGTTCTTC	<del>CAAAACCCCTC</del>	GCAGAGACTC	CTTCGGGCC	540
40	TGCAAGATCC	ACGGAGACCT	<del>TATAAGGTGA</del>	TACAGGCCGA	TGAGCCACTG	CGGCATCCC	600
	CACTCCTCCA	TAATAGCACA	<del>TCTAGACCC</del>	AGAGAAAAGT	TATTCTGGGT	GGAGTCAAAC	660
45	TCAGAAAAGT	CATTCTCAA	<del>CAACATGGAT</del>	GCCTTGCTG	CGGCCACAGC	CGCCGAGAAG	720
	ACGGTGTAT	CAAAGGCATC	<del>ACGTAAAAC</del>	ACACCCCTGAG	GGAGCAGGGC	CAGAATAGCC	780
50	TTCTCAATAG	CGCGGAACCA	<del>AGGGCCAAAG</del>	AGGGCGCAGA	AGGTCTTGCT	CCAGGCCGAG	840
	ATGCCCTGGC	CCACTTTACC	ATGGGCAATG	GTCTCACCTG	TGGTGAACCT	GTTACAATCT	900
55	TTCTGGAAGA	AGGTGATCCT	GGACACGTCA	CGGTTGCAAA	GATCAAGCTC	AAGGACGGCG	960
	GAGCCATCCT	GGCCCTCTC	GACCATGGCC	TCCACTAGCT	CGTACAATTC	ACAAGTTGTA	1020
	ACCTGTACGG	GGCCAATGGC	CGGGATAAAA	CGGGCGAGAG	AGTCGCGAAC	ATCAGAGTGG	1080
	GAAGCATTGT	AGAGCTTTGT	GGGACCGCCG	TAGCGGCCCA	CGAGTGTGGA	CAGCACGGCC	1140
	TTGCCGCTGGC	TCGGGGCGGC	<del>CATGCGGCAG</del>	TGCACAAATGT	CTGTTAATTC	AAATGTTACG	1200

ACACAT~~A~~CAC AGGTGGTGAG CTCTGGGGC AGGTAGAGAA GGCCCTGTTG GAGCTCGGGG 1260  
 CAGGGTGGTA GAACAGCTGC AACAGGGACA CGTCT 1295  
 5 a third sequence (SEQ ID NO.6):  
 AGGCAGACCA CATAATGTTGATGAGCG ATGGAGGCCC ATCAGTTTAT TAAGGCTCCT 57  
 GGCATCACTA CTGCTATTGA CGAGGCTGCT CTAGCAGGG CGAACCTCTGC CCTGGCGAAT 117  
 10 GCTGTGGTAG TTAGGGCTTT TCTCTTCAC CAGCAGATTG AGATCCTCAT TAACCTAATG 177  
 CAACCTCGCC AGCTTGTCTT CGCGCCCGAG GTTTCTGGA ATCATCCCAT CCAGCGTGTC 237  
 15 ATCCATAACG AGCTGGAGCT TTACTGCCGC GCCCCTCTCG GCCGCTGTCT TGAAATTGGC 297  
 GCCCATCCCC GCTCAATAAA TGATAATCCT AATGTGGTCC ACCGCTGCTT CCTCCGCCCT 357  
 GTTGGGCGTG ATGTTCA~~GCG~~ CTGGTATACT GCTCCCACTC GCGGGCCGGC TGCTAATTGC 417  
 20 CGGGCGTTCCG CGCTGCCGGG GCTTCCCGCT GCTGACCGCA CTTACTGCCT CGACGGGTTT 477  
 TCTGGCTGTA ACTTTCCCGC CGAGACTGGC ATCGCCCTCT ACTCCCTTCA TGATATGTCA 537  
 25 CCATCTGATG TCGCCGAGGC CATGTTCCGC CATGGTATGA CGCGGCTCTA TGCCGCCCTC 597  
 CATCTTCCGC CTGAGGTCTT GCTGCCCTT GGACATATC GCACCGCCTC GTATTTGCTA 657  
 ATTCAATGACG GT~~GGGGCST~~ TGGTGACG TATGAGGGTG ATACTAGTGC TGGTTACAAC 717  
 30 CACGATGTCT CC~~A~~ACTTGCG CTCCTGGATT AGAACCCACCA AGGTTACCGG AGACCATCCC 777  
 CTCGTTATCG AGC~~GGGTTAG~~ GGCCATTGGC TGCCACTTGT TTCTCTTGCT CACGGCAGCC 837  
 35 CGGGAGCCAT CACGTATGCC TTATGTTCT TACCCCGGT CTACCGAGGT CTATGTCCGA 897  
 TCGATCTTCG GCCC~~GGGTGG~~ CACCCCTTCC TTATTC~~CCAA~~ CCTCATGTC CACTAAGTCG 957  
 ACCTTCCATG CTGTCCTGC CCATATTG~~T~~ GACCGTCTTA TGCTGTTGGG GGCCACCTT 1017  
 40 GATGACCAAG CCTTTGCTG CTCCCGTTA ATGACCTACC TTCGCGGCAT TAGCTACAAG 1077  
 GTCACTGTTG GTACCCCTGT GGCTAATGAA GGCTGGAATG CCTCTGAGGA CGCCCTCAC 1137  
 45 GCTGTTATCA CTGCCGCTA CCTTACCAATT TGCCACCCAGC GGTATCTCCG CACCCAGGCT 1197  
 ATATCCAAGG GGATGCGTCG TCTGGAACGG GAGCATGCC AGAAGTTTAT AACACGCCCTC 1257  
 TACAGCTGGC TCTTGAGGA G~~GGGGCCST~~ GATTACATCC CTGGCGTCA GTTGGAGTT 1317  
 50 TACGCCAGT GCAGGGCGT~~G~~ GCTCTCCGCC GGT~~TTT~~ATC TTGATCCACG GGTGTTGGTT 1377  
 TTTGACGAGT CGGCCCCCTG CGATTGAGG ACCGCGATCC GTAAGGCCT GCTAAAGTTT 1437  
 TGCTGCTTCA TGAAGTGCGT TGGTGGAGG TGACCTGCT TCTTCAGCC TGCAGAAGGC 1497  
 55 GCGTCGGCG ACCAGGGTCA TGATAATGAA GCCTATGAGG GGTCCGATGT TGACCCCTGCT 1557

	GAGTCCGCCA	TTAGTGACAT	ATCTGGGTCC	TATGTCGTCC	CTGGCACTGC	CCTCCAACCG	1617
5	CTCTTACCAAGG	CCCTCGATCT	CCCCGCTGAG	ATTGTGGCTC	GCGCGGGCCG	GCTGACCGCC	1677
	ACAGTAAAGG	TCTCCAGGT	CGATGGGCGG	ATCGATTGCG	AGACCCCTCT	TGGTAACAAA	1737
	ACCTTTCGCA	CGTGTGTTGCT	TGACGGGGCG	GTCTTAGAGA	CCAATGGCCC	AGAGGCCAC	1797
10	AATCTCTCT	TCGATGCCAG	TCAGAGCACT	ATGGCCGCTG	GCCCTTTCAG	TCTCACCTAT	1857
	GCCGCCTCTG	CAGCTGGCT	GGAGGTGCGC	TATGTTGCTG	CCGGGCTTGA	CCATCGGGCG	1917
15	GTTTTGCC	CGGGTGTTC	ACCCCGGTCA	GCCCCGGCG	AGGTTACCGC	CTTCTGCTCT	1977
	GCCCTATACA	GGTTAACCG	TGAGGCCAG	CGCCATTGCG	TGATCGTAA	CTTATGGTTC	2037
	CATCCTGAGG	GAETCATTTGG	CCTCTTCGCG	CCGTTTTCGC	CCGGGCATGT	TTGGGAGTCG	2097
20	GCTAATCCAT	TCTGTGGCGA	GAGCACACTT	TACACCCGTA	CTTGGTCGGA	GGTTGATGCC	2157
	GTCTCTAGTC	CAGCCCGGCC	TGACTTAGGT	TTTATGTCG	AGCCTTCTAT	ACCTAGTAGG	2217
25	GCCGCCACGC	CTACCCCTGGC	GGCCCTCTA	CCCCCCCCCTG	CACCGGACCC	TTCCCCCCCT	2277
	CCCTCTGCC	CGGCGCTGC	TGAGCCGGCT	TCTGGCGCTA	CCGCCGGGGC	CCCGGCCATA	2337
	ACTCACCAGA	CGGCCCCGCA	CCGGCGCGTG	CTCTTCACCT	ACCCGGATGG	CTCTAAGGTA	2397
30	TTCGCCGGCT	CGCTGTTCGA	GTCGACATGC	ACGTGGCTG	TTAACCGC	TAATGTTGAC	2457
	CACCGCCCTG	CGGGCGGGCT	TTGCATGCA	TTTACAAA	GGTACCCCGC	CTCCTTGAT	2517
35	GCTGCCTCTT	TTGTGATGCC	CGACGGCGCG	GCGCGTACA	CACTAACCCC	CCGGCCAATA	2577
	ATTCACGCTG	TCGCCCTGA	TTATAGGTTG	GAACATAACC	CAAAGAGGCT	TGAGGCTGCT	2637
	TATCGGGAAA	CTTGCTCCCG	CCTCGGCACC	GCTCCATACC	CGCTCCTCGG	GACCGGCATA	2697
40	TACCAAGGTG	CGATCGGCC	CAGTTTGAC	GCCTGGAGC	GGAACCACCG	CCCCGGGGAT	2757
	GAGTTGTACC	TTCTTGAGCT	TGCTGCCAGA	TGGTTGAGG	CCAATAGGCC	GACCCGCCCG	2817
45	ACTCTCACTA	TAACGTAGGA	TGTTGCACGG	ACAGCGAATC	TGGCCATCGA	GCTTGACTCA	2877
	GCCACAGATG	TCGGCCGGGC	CTGTGCCGGC	TGTCGGGTCA	CCCCGGCGT	TGTTCACTAC	2937
	CAGTTTACTG	CAGGTGTGCC	TGGATCCGGC	AAGTCCCGCT	CTATCACCCA	AGCCGATGTG	2997
50	GACGTTGTG	TGGTCCCGAC	CGGTGAGTTG	CGTAATGCCT	GGCGCCGTG	CGGCTTGCT	3057
	GCTTTACCC	CGCATACTGC	CGCCAGAGTC	ACCCAGGGGC	GCCGGGTTGT	CATTGATGAG	3117
55	GCTCCATCCC	TCCCCCCCTCA	CCTGCTGCTG	CTCCACATGC	AGCGGGCCGC	CACCGTCCAC	3177
	CTTCTTGGCG	ACCCGAACCA	GATCCAGCC	ATCGACTTTG	AGCACGCTGG	GCTCGTCCCC	3237

	GCCATCAGGC CGCACTTGGG CCCACCTCC TGGTGGCATG TTACCCATCG CTGGCCTGCG	3297
5	GATGTATGCG AGCTCATCG TGTTGCATACT CCATGATCC AGACCACTAG CGGGGTTCTC	3357
	CGTCGTTGT TCTGGGTGA SCCTGCCGTC GGGCAGAAC TAGTGTTCAC CCAGGCGGCC	3417
	AAGCCCCCCA ACCCCCCCCGTC AGTGACGGTC CACGAGGGCG AGGGCGCTAC CTACACGGAG	3477
10	ACCACTATTA TTGCCACAGG AGATGCCCGG GGCCATTATTC AGTCGTCTCG GGCTCATGCC	3537
	ATTGTTGCTG TGACGCCCA CACTGAGAAG TGCGTCATCA TTGACGCACC AGGCCTGCTT	3597
15	CGCGAGGTGG GCATCTCCGA TSCAATCGTT AATAACTTTT TCCTCGCTGG TGGCGAAATT	3657
	GGTCACCAAGG GCCCATCACT TATCCCCGT GGCAACCCCTG ACGCCAATGT TGACACCCCTG	3717
	GCTGCCTTCC CGCCGCTTG CTGATTAGT GCCTTCATC AGTTGGCTGA GGAGCTTGGC	3777
20	CACAGACCTG TCCCTTTGC AGCTGTTCTA CCACCGTGC CCGAGCTCGA ACAGGGCCTT	3837
	CTCTACCTGC CCCAGGAGCT CACCACTGT GATAGTGTGS TAACATTTGA ATTAACAGAC	3897
25	ATTGTGCACT GCCGCATGGC CGCCCCGAGC CAGCGCAAGG CCGTGCTGTC CACACTCGT	3957
	GGCCGCTACG CGGGTCGCAC AAAGCTCTAC ATGCTTCCC ACTCTGATGT TCGCGACTCT	4017
	CTCGCCCGTT TTATCCCGGC CATTGGCCCC GTACAGGTTA CACTTGTGA ATTGTACGAG	4077
30	CTAGTGGAGG CCATGGTCGA GAAGGGCCAG GATGGCTCCG CCGTCCTTGA GCTTGATCTT	4137
	TGCAACCGTG ACGTGTCCAG GATACCTTC TTCCAGAAAAG ATTGTAACAA GTTCACCAACA	4197
35	GGTGAGACCA TTGCCCATGG TAAAGTGGGC CAGGGCATCT CGGCCTGGAG CAAGACCTTC	4257
	TGCGCCCTCT TTGGCCCTTG GTTCCGGCT ATTGAGAAGG CTATTCTGGC CCTGCTCCCT	4317
	CAGGGTGTGT TTTACGGTGA TGCTTTGAT GACACCGTCT TCTGGCGGC TGTGGCCGCA	4377
40	GCAAAGGCAT CCATGGTGT TGAGAATGAC TTTTCTGAG TTGACTCCAC CCAGAATAAC	4437
	TTTTCTCTGG GTCTAGAGTG TGCTATTATG GAGGAGTGTG GGATGCCGCA GTGGCTCATC	4497
45	CGCCTGTATC ACCTTATAAG GTCTGGGTGG ATCTTGAGG CCCCCGAAGGA GTCTCTGCCA	4557
	GGGTTTTGGA AGAAACACTC CGGTGAGGCC CGCACTCTTC TATGGAATAC TGTCTGGAAT	4617
	ATGGCCGTTA TTACCCACTG TTATGACTTC CGCGATTTTC AGGTGGCTGC CTTTAAAGGT	4677
50	GATGATTCGA TAGTGCTTTG CAGTGAGTAT CGTCAGAGTC CAGGAGCTGC TGTCCCTGATC	4737
	GCCGGCTGTG GCTTGAAGTT GAAGGTAGAT TTCCGCCGA TCGGTTGTA TGCAGGGTGT	4797
55	GTGGTGGCCC CGGGCCTTGG CGCGCTCCCT GATGTTGTGC GCTTCGCCGG CGGGCTTACCC	4857
	GAGAAGAATT GGGGCCCTGG CCCTGAGCGG CGGGAGCAGC TCCGCTCGC TGTTAGTGAT	4917

	TTCCCTCCGCA AGCTCACGAA TGTAGCTGAG ATGTGTGTGG ATGTTGTTTC CCGTGTTAT	4977
5	GGGGTTTCCC CTGGACTCGT TCATAACCTG ATTGGCATGC TACAGGCTGT TGCTGATGGC	5037
	AAGGCACATT TCAGTGGAGTC AGTAAAAACCA GTGCTCGACT TGACAAATTCAATCTGTGT	5097
	CGGGTGGAAT GA ATAACATGTC TTTCGCTGCG CCATGGGTT CGCGACCAGT	5149
10	CGCCCTCGGC CTATTTGTT GCTGCTCTC ATGTTTTGTC CTATGCTGCC CGGCCACCG	5209
	CCCGGTCAGC CGTCTGGCCG CGTCTGGGG CGGGCCAGCG GCGGTTCCGG CGGTGGTTTC	5269
15	TGGGGTGACC GGGTTGATTC TCAGCCCTTC GCAATCCCT ATATTCACTAACCAACCCC	5329
	TTCGCCCCCG ATGTCACCGC TGCGGCCGGG GCTGGACCTC GTGTTGCCA ACCCGCCCCGA	5389
	CCACTCGGCT CGCCTTGGCG TGACCCAGGCC CAGCGCCCCG CCGTTGCCCT ACCTCGTAGA	5449
20	CCTACCACAG CTGGGGCCGC GCCGCTAA CGCGGTGCG TCCGGCCCAT GACACCCCGC	5507
	CAGTGCCTGA TGTGACTCC CGCGGCCCA TCTTGCCTCG GCAGTATAAC CTATCAACAT	5567
25	CTCCCTTAC CTCTTCCGTG GCCACCGGCA CTAACCTGGT TCTTATGCC GCCCCCTTTA	5627
	GTCCGCTTT ACCCCTTCAG GACGGCACCA ATACCCATAT AATGGCCACG GAAGCTTCTA	5687
	ATTATGCCCA GTACCGGGTT GCGCGTGCCA CAATCCGTTA CCGCCCGCTG GTCCCCAATG	5747
30	CTGTCGGCGG TTACGCCAT <del>TCCATCTCAT</del> TCTGGCCACA GACCACCACC ACCCGACGT	5807
	CCGTTGATAT GAATTCAATA ACCTCGACGG ATGTTGTAT TTTAGTCCAG CCCGGCATAG	5867
35	CCTCTGAGCT TGTGATCCC AGTGAGCGCC TACACTATCG TAACCAAGGC TGGCGCTCCG	5927
	TCGAGACCTC TGGGGTGGCT GAGGAGGAGG CTACCTCTGG TCTTGTATG CTTTGCATAC	5987
	ATGGCTCACT CGTAAATTCC TATACTAATA CACCCCTATAC CGGTGCCCTC GGGCTGTTGG	6047
40	ACTTTGCCCT TGAGCTTGAG TTTCGCAACC TTACCCCGG TAACACCAAT ACGCAGGTCT	6107
	CCCGTTATTC CAGCACTGCT CGCCACCGCC TTGCGCGGG TGCGGACGGG ACTGCCGAGC	6167
45	TCACCAACAC GGCTGCTACC CGCTTATGA AGGACCTCTA TTTACTAGT ACTAATGGTG	6227
	TCGGTGAGAT CGGCGCGGG ATAGCCCTCA CCTGTTCAA CCTTGCTGAC ACTCTGCTTG	6287
	GCGGCCTGCC GACAGAATTG ATTCGCTGG CTGGTGGCCA CCTGTTCTAC TCCCGTCCCG	6347
50	TTGTCTCAGC CAATGGCGAG CGCACTCTTA AGTTGTATAC ATCTGTAGAG AATGCTCAGC	6407
	AGGATAAGGG TATTGCAATC CGCATGACA TTGACCTCGG AGAATCTCGT GTGGTTATTC	6467
55	AGGATTATGA TAACCAACAT GAACAGATC GGCGACGCC TTCTCCAGCC CCATCGCGCC	6527
	CTTTCTCTGT CCTTCGAGCT AATGATGTGC TTGGCTCTC TCTCACCGCT GCCGAGTATG	6587

	ACCAAGTCCAC TTATGGCTCT TCGACTGGCC CAGTTTATGT TTCTGACTCT GTGACCTTGG	6647
5	TTAATGTTGC GACCGGCGCG CAGGCCGTTG CCCGGTCGCT CGATTGGACC AAGGTCACAC	6707
	TTGACGGTCG CCCCCTCTCC ACCATCCAGC AGTACTCGAA GACCTTCTTT GTCTGCCGC	6767
	<del>TCGGCGGTAA</del> GCTCTCTTTC TGGGAGGAG AGCAAACTAA AGCCGGGTAC CCTTATAATT	6827
10	ATAAACACAC TGCTAGGGAC CAACTGCTTG TCGAGAAATGC CGCCGGGCAC CGGGTCGCTA	6887
	TTTCCACTTA CACCACTAGC CTGGGTGCTG GTCCCGTCTC CATTCTGCG GTGCCGTTT	6947
15	TAGCCCCCCA CTCTGCGCTA GCATTCCTT3 AGGATAACCTT GGACTACCCCT GCCCGCGCCC	7007
	ATACTTTGA TGATTTCTGC CCAGAGTGCC GCCCCCTTGG CCTTCAGGGC TGCGCTTTCC	7067
	AGTCTACTGT CGCTGAGCTT CAGCGCTTA AGATGAAGGT GGGTAAAACG CGGGAGTTGT	7127
20	AG TTTATTTGCT TGTGCCCTAC TTCTTCTGT TGCTTATTTC TCATTTCTGC	7179
	GTTCCCGCGCT CCCTGA	7195
	a fourth sequence (SEQ ID NO.10):	
25	GCCATGGAGG CCCACCAGTT CATTAAAGGCT CCTGGCATCA CTACTGCTAT TGAGCAAGCA	60
	GCTCTAGCAG CGGCCAAGTC CGCCCTTCCG AAT3CTGTGG TGGTCCGGCC TTTCTTTCC	120
30	CATCAGCAGG TTGAGATCCT TATAAATCTC ATGCAACCTC GGCAGCTGGT GTTTCGTCT	180
	GAGGTTTTT GGAATCACCGT GATTCAACGT GTTATAACATA ATGAGCTTGA GCAGTATTGC	240
	CGTGCTCGCT CGGGTGCCTG CCTTGAGATT GAGGCCACC CACGCTCCAT TAATGATAAT	300
35	CCTAATGTCC TCCATCGCTG CCTTCTCCAC CGCGTCGGCC GGGATGTTCA GCGCTGGTAC	360
	ACAGCCCCGA CTAGGGGACC TCGGGCGAAC TGTGCGCGCT CGGCACCTCG TGGTCTGCCA	420
	CCAGCCGACC GCACTTACTG TTTTGATGGC TTTGCCGGCT GCGTTTTGC CGCCGAGACT	480
40	GGTGTGGCTC TCTATTCTCT CCATGACTTG CAGCCGGCTG ATGTTGCCGA GGCATGGCT	540
	CGCCACGGCA TGACCCCGCT TTATGCAAGCT TTCCACATGC CTCCAGAGGT GCTCCTGCC	600
45	CCTGGCACCT ACCGGACATC ATCCTACTTG CTGATCCACG ATGGTAAGCG CGCGGTTGTC	660
	ACTTATGAGG GTGACACTAG CGCCGGTTAC AATCATGATG TTGCCACCCCT CGGCACATGG	720
50	ATCAGGACAA CTAAGGTTGT GGGTGAACAC CCTTGGTGA TCGAGCGGGT GCGGGGTATT	780
	GGCTGTCACT TTGTGTTGTT GATCACTGCG GCCCCTGAGC CTCCTCGAT GCCCTACGTT	840
	CCTTACCCGC GTTCCACGGA GGTCTATGTC CGGTCTATCT TTGGGCCCGG CGGGTCCCCG	900
55	TCGCTGTTCC CGACCGCTTG TGTGTAG AGTCCACTTTTC ACGCCGTCCC CACGCACATC	960

	TGGGACCGTC	'TCATGCTTT	TGGGCCAAC	CTCGACGACC	AGGCCTTTG	CTGCTCCAGG	1020
	CTTATGACGT	ACCTTCGTGG	CATTAGCTAT	AAGGTAAC TG	TGGGTGCCCT	GGTCGCTAAT	1080
5	GAAGGCTGGA	ATGCCACCGA	GGATGCGCTC	ACTGCAGTTA	TTACGGCGGC	TTACCTCAC A	1140
	ATATGTCATC	AGC GTTATTT	CGCGACCCAG	GCGATTCTA	AGGGCATGCG	CCGGCTTGAG	1200
10	CTTGAACATG	CTCAGAAATT	TATTTACGC	CTCTACAGCT	GGCTATTG A	GAAGTCAGGT	1260
	CGTGATTACA	TC CCAGGCCG	CCAGCTGCAG	TTCTACGCTC	AGTGCCGCCG	CTGGTTATCT	1320
	GCCGGGTTCC	ATCTCGACCC	CCGCACCTA	GTTTTGATG	AGTCAGTGCC	TTGTAGCTGC	1380
15	CGAACCCACCA	TC CGGCGGAT	CGCTGGAAAA	TTTGCTGTT	TTATGAAGTG	GCTCGGT CAG	1440
	GAGTGTCTT	GT TTCTCCA	GCCGCCGAG	GGGCTGGCGG	GCGACCAAGG	TCATGACAAT	1500
20	GAGGCCTATG	AAGGCTCTGA	TGTTGATACT	GCTGAGCCTG	CCACCC TAGA	CATTACAGGC	1560
	TCATACATCG	TGGATGGTCG	GTCTCTCAA	ACTGTCTATC	AAGCTCTCGA	CCTGCCAGCT	1620
	GACCTGGTAG	CTCGCGCAGC	CCGACTGTCT	GCTACAGTTA	CTGTTACTGA	AA CCTCTGGC	1680
25	CGTCTGGATT	GCCAAACAAT	GATCGGCAAT	AAGACTTTTC	TC ACTACCTT	TGTTGATGGG	1740
	GCACGCC TTG	AGGTTAACGG	GCCTGAGCAG	CTTAACCTCT	CTTTTGACAG	CCAGCAGTGT	1800
30	AGTATGGCAG	CGGGCCC GTT	TTGCCTCACC	TATGCTGCCG	TAGATGGCGG	GCTGGAAAGTT	1860
	CATTTTCCA	CGCGCTGGC CT	CGAGAGCCGT	GT GTTTCC	CCCCTGGTAA	TGCCCGACT	1920
	GCCCCGCCGA	GTGAGGTCAC	GCCTTCTGC	TCAGCTCTT	ATAGGCACAA	CCGGCAGAGC	1980
35	CAGCGCCAGT	CGGTTATTGG	TAGTTGTGG	CTGCACCTG	AAGGTTGCT	CGGCCGTTC	2040
	CCGCCCTTT	CACCCGGCA	TGAGTGGCGG	TCTGCTAAC C	CATTTGCGG	CGAGAGCAG	2100
40	CTCTACACCC	GA CTTGGTC	CACAA TACA	GACACACCT	TA ACTGTCGG	GCTAATT TCC	2160
	GGTCATTG G	ATGCTGCTCC	CCACTCGGGG	GGGCCACCTG	CTACTGCCAC	AGGCCCTGCT	2220
	GTAGGCTCGT	CTGACTCTCC	AGACCC TGAC	CCGCTACCTG	ATGTTACAGA	TGGCTCACGC	2280
45	CCCTCTGGGG	CCC GTCCGGC	TGGCCCCAAC	CCGAATGGCG	TTCCGCAGCG	CCGCTTACTA	2340
	CACACCTACC	CTGACGGCGC	TAAGATCTAT	GTCGGCTCCA	TTTCGAGTC	TGAGTGCACC	2400
50	TGGCTTGTC A	ACGCATCTAA	CGCCGGCCAC	CGCCCTGGTG	GC GGCTTTG	TCATGCTTT	2460
	TTTCAGCGTT	ACCC TGATTC	GTTGACGCC	ACCAAGTTG	TGATGGGTGA	TGGCTTGCC	2520
	GCGTATA CCI	TTACACCCCG	CCCGATCATT	CATGCGGTGG	CCCCGGACTA	TCGATTGGAA	2580
55	CATAACCCCA	AGAGGCTCGA	GGCTGCC TAC	CGCGAGACTT	GCGCCCGCCG	AGGC ACTGCT	2640

	GCCTATCCAC	TCTTGGCGC	TGGCATTTAC	CAGGTGCGTG	TTAGTTGAG	TTTGATGCC	2700
	TGGGAGCGGA	ACCACCGCCC	GTTTGAAGAG	CTTTACCTAA	CAGAGCTGGC	GGCTCGGTGG	2760
5	TTTGAATCCA	ACCGCCCCGG	TCAAGCCCCAG	TTGAAACATAA	CTGAGGATAAC	CGCCCGTGC	2820
	GCCAACCTGG	CCCTGGAGCT	TGACTCCGGG	AGTGAAGTAG	GCGCGCATG	TGCCGGGTGT	2880
10	AAAGTCGAGC	CTGGCGTTGT	GCGGTATCAG	TTTACAGCGG	GTGTCCCCGG	CTCTGGCAAG	2940
	TCAAAGTCG	TGCAACAGGC	GGATGTGGAT	GTTGTTGTTG	TGCCCACCTCG	CGAGCTTCGG	3000
	AACGCTTGGC	GGCGCGGGGG	CTTTCGCGCA	TTCACTCCGC	ACACTGCGGC	CCGTGTCACT	3060
15	AGCGGCCGTA	GGGTTGTCAT	TGATGAGGCC	CCCTCGCTCC	CCCCACACTT	GCTGCTTTA	3120
	CATATGCAGC	GTGTCATC	TGTGCACCTC	CTTGGGACC	CGAACATCAGAT	CCCCGCCATA	3180
20	GATTTGAGC	ACACCGGTCT	GATTCCAGCA	ATACGGCCGG	AGTTGGTCCC	GACTTCATGG	3240
	TGGCATGTCA	CCCACCGTTG	CCCTGCAGAT	GTCTGTGAGT	TAGTCCGTGG	TGCTTACCC	3300
	AAAATCCAGA	CTACAAGTAA	GGTGCTCCGT	TCCCTTTCT	GGGGAGAGCC	AGCTGTCGGC	3360
25	CAGAACAGTAG	TGTTCACACA	GGCTGCTAAG	GCGCGCACC	CCGGATCTAT	AACGGTCCAT	3420
	GAGGCCAGG	GTGCCACTTT	TACCACTACA	ACTATAATTG	CAACTGCAGA	TGCCGTGGC	3480
30	CTCATACAGT	CCTCCGGGC	TGACGCTATA	GTGCTCTCA	CTAGGCATA	TGAAAAATGT	3540
	GTTATACTTG	ACTCTCCGG	CGTGTGTGT	GAGGTGGTA	TCTCAGATGC	CATTGTTAAT	3600
	AATTTCTTCC	TTTCGGGTGG	CGAGGTTGGT	CACCAAGAGAC	CATCGGTAT	TCCGCGAGGC	3660
35	AACCCGTGACC	GCAATGTTGA	CGTCTTGCG	GCGTTCCAC	CTTCATGCCA	AATAAGCGCC	3720
	TTCCATCAGC	TTGCTGAGGA	GCTGGGCCAC	CGGCCGGCGC	CGGTGGCGGC	TGTGCTACCT	3780
40	CCCTGCCCTG	AGCTTGAGCA	GGGCCTTC	TATCTGCCAC	AGGAGCTAGC	CTCCGTGAC	3840
	AGTGTGTGA	CATTTGAGCT	AACTGACATT	GTGCACTGCC	GCATGGCGGC	CCCTAGCCAA	3900
	AGGAAAGCTG	TTTTGTCCAC	GCTGGTAGGC	CGGTATGGCA	GACGCACAAG	GCTTTATGAT	3960
45	GCGGGTCACA	CCGATGTCCG	CGCCTCCCTT	GCGCGCTTTA	TTCCCACTCT	CGGGCGGGTT	4020
	ACTGCCACCA	CCTGTGAACT	CTTTCAGCTT	GTAGAGGCGA	TGGTGGAGAA	GGGCCAAGAC	4080
50	GGTTCAAGCCG	TGCTCGAGTT	GGATTGTGC	AGCCGAGATG	TCTCCCGCAT	AACCTTTTC	4140
	CAGAAGGATT	GTAACAAGTT	CACGACCGAC	GAGACAATTG	CCCATGGCAA	AGTCGGTCAG	4200
	GGTATCTTCC	GCTGGAGTAA	GACGTTTGT	GCCCTGTTG	GCCCGTGGTT	CCGTGCGATT	4260
55	GAGAAGGCTA	TTCTATCCCT	TTTACACAA	GCTGTGTTCT	ACGGGGATGC	TTATGACGAC	4320

	TCAGTATTCT CTGCTGCCGT GGCTGGCGCC AGCCATGCCA TGGTGTTGA AAATGATTT	4380
	TCTGAGTTTG ACTCGACTCA GAATAACCTT TCCCTAGGTC TTGAGTGCAG CATTATGGAA	4440
5	GAGTGTGGTA TGCCCCAGTG GCTTGTCAAGG TTGTACCATG CCGTCCGGTC GGCGTGGATC	4500
	CTGCAGGGCCC CAAAAGAGTC TTTGAGAGGG TTCTGGAAGA AGCATTCTGG TGAGCCGGC	4560
10	AGCTTGCTCT GGAATAACGGT GTGGAACATG GCAATCATTG CCCATTGCTA TGAGTTCCGG	4620
	GACCTCCAGG TTGCGCGCTT CAAGGGCGAC GACTCGGTG TCCTCTGTAG TGAATACCGC	4680
	CAGAGCCAGG GCGCCCGTTC GCTTATAACA GGCTGTGGTT TGAAGTTGAA GGCTGACTTC	4740
15	CGGCCGATTG GGCTGTATGC CGGGGTTGTC GTCGCCCCGG GGCTCGGGGC CCTACCCGAT	4800
	GTCGTTCGAT TCGCCGGACG GCTTCGGAG AAGAACTGGG GGCTGATCC GGAGCGGGCA	4860
20	GAGCAGCTCC GCCTCGCCGT GCAGGATTTC CTCCGTAGGT TAACGAATGT GGCCAGATT	4920
	TGTGTTGAGG TGGTGTCTAG AGTTTACGGG GTTTCCCCGG GTCTGGTTCA TAACCTGATA	4980
	GGCATGCTCC AGACTATTGG TGATGGTAAG GCGCATTAA CAGAGTCTGT TAAGCCTATA	5040
25	CTTGACCTTA CACACTCAAT TATGCACCGG TCTGAATGAA TAACATGTGG TTTGCTGCGC	5100
	CCATGGGTTTC GCCACCATGTC GCGCTAGGCC TCTTTIGCTG TTGTTCTCT TGTTCTGCC	5160
30	TATGTTGCCCG GCGCCACCGA CCAGTCAGCC GTCTGGCCGC CGTCGTGGGC GGCGCAGCGG	5220
	CGGTACCGGC GGTGGT <del>TTCT</del> GGGGTGACCG GGTTGATTCT CAGCCCTCG CAATCCCTA	5280
	TATTCACTCCA ACCAACCCCT TTGCCCCAGA CGTTGCCGCT GCGTCCGGGT CTGGACCTCG	5340
35	CCTTCGCCAA CCAGCCCGG CACTTGGCTC CACTTGGCGA GATCAGGCC AGCGCCCCCTC	5400
	CGCTGCCTCC CGTCGCCGAC CTGCCACAGC CGGGGCTGCG GCGCTGACGG CTGTGGCGCC	5460
40	TGCCCCATGAC ACCTCACCCG TCCCCGACGT TGATTCTCGC GGTGCAATTG TACGCCGCCA	5520
	GTATAATTG TCTACTTCAC CCCTGACATC CTCTGTGGCC TCTGGCACTA ATTTAGTCCT	5580
	GTATGCAGCC CCCCTTAATC CGCCTCTGCC GCTGCAGGAC GGTACTAATA CTCACATTAT	5640
45	GGCCACAGAG GCCTCCAATT ATGCACAGTA CGGGGTTGCC CGCGCTACTA TCCGTTACCG	5700
	GCCCCTAGTG CCTAATGCAG TTGGAGGCTA TGCTATATCC ATTTCTTCTT GGCCTCAAAC	5760
50	AACCACAAACC CCTACATCTG TTGACATGAA TTCCATTACT TCCACTGATG TCAGGATTCT	5820
	TGTTCAACCT GGCAATAGCAT CTGAATTGGT CATCCCAAGC GAGCGCCTTC ACTACCGCAA	5880
	TCAAGGTTGG CGCTCGGTTG AGACATCTGG TGTTGCTGAG GAGGAAGCCA CCTCCGGTCT	5940
55	TGTCAATGTTA TGCATACATG GCTCTCCAGT TAACTCTAT ACCAATACCC CTTATACCGG	6000

1 TGCCCTTGGC TACTGGACT TTGCCTTAGA GCTTGAGTTT CGCAATCTCA CCACCTGAA 6060  
 5 CACCAATACA CGTGTGTCCC GTTACTCCAG CACTGCTCGT CACTCCGCC GAGGGGCCGA 6120  
 10 CGGGACTGCG GAGGTGACCA CAACTGCAGC CACCAAGGTC ATGAAAGATC TCCACTTTAC 6180  
 15 CGGCCTTAAT GGGGTAGGTG AAGTCGGCG CGGGATAGCT CTAACATTAC TTAACCTTGC 6240  
 20 TGACACGCTC CTGGCGGGCG TCCCGACAGA ATTAATTTCG TCGGCTGGCG GGCAACTGTT 6300  
 25 TTATTCCCGC CGGGTTGTCT CAGCCAATGG CGAGCCAACC GTGAAGCTCT ATACATCAGT 6360  
 30 GGAGAAATGCT CAGCAAGATA AGGGTGTTCG TATCCCCAC GATATCGATC TTGGTGTTC 6420  
 35 GCGTGTGGTC ATTCAAGGATT ATGACAACCA SCATGAGCAG GATCGGCCCA CCCCGTCGCC 6480  
 40 TGCGCCATCT CGGCCTTTTG CTGTTCTCG AGCAATGAT GTACTTTGGC TGTCCCTCAC 6540  
 45 TGCAGCCGAG TATGACCACT CCACTTACGG GTCGTCAACT GGCCCGGTTT ATATCTCGGA 6600  
 50 CAGCGTGAET TTGGTGAATG TTGCGACTGG CGCGCAGGCC GTAGCCCGAT CGCTTGACTG 6660  
 55 GTCCAAAGTC ACCCTCGACG GGCGGCGCGT CCGACTGTT GAGCAATATT CCAAGACATT 6720  
 60 CTTTGTGCTC CCCCTCGTG GCAAGCTTC CTTTGGGAG GCCGGCACAA CAAAAGCAGG 6780  
 65 TTATCCTTAT AATTATAATA CTACTGCTAG TGACCAAGATT CTGATTGAAA ATGCTGCCGG 6840  
 70 CCATCGGGTC GCCATTCAA CCTATHCCAC CAGGCTGGG GCCGGTCCGG TCGCCATTTC 6900  
 75 TGCAGCCGCG GTTTGGCTC CACGCTCCGC CCTGGCTCGT CTGGAGGATA CTTTGATTA 6960  
 80 TCCGGGGCGG GCGCACACAT TTGATGACTT CTGCCCTGA~~A~~ TGCCGCGCTT TAGGCCTCCA 7020  
 85 GGGTTGTGCT TTCCAGTC~~A~~ CTGTCGCTGA GCTCCAGCGC CTTAAAGTTA AGGTGGGTAA 7080  
 90 AACTCGGGAG TTGTAGTT~~A~~ TTTGGCTGTG CCCACCTACT TATATCTGCT GATTTCTTT 7140  
 95 40 or a fifth sequence (SEQ ID NO.12):  
 CGGGCCCCGT ACAGGTACA CCTGTGAGT GTACGAGCT AGTGGAGGCC ATGGTCGAGA 60  
 100 AAGGCCAGGA TGGCTCCGCC GTCCCTGAGC TCGATCTCTG CAACCGTGAC GTGTCCAGGA 120  
 105 TCACCTTTT CCAGAAAGAT TGCAATAAGT TCAACCACGGG AGAGACCATC GCCCATGGTA 180  
 110 AAGTGGGCCA GGGCATTTTG AGCTGGAGTA AGACCTTCTG TGCCCTTTTC GGCCCTGGT 240  
 115 TCCGTGCTAT TGAGAAGGCT ATTCTGGCCC TGCTCCCTCA GGGTGTGTTT TATGGGGATG 300  
 120 CCTTTGATGA CACCGTCTTC TCGGCGCGTG TGGCCGCAGC AAAGGCGTCC ATGGTGTGTT 360  
 125 AGAATGACTT TTCTGAGTTT GACTCCACCC AGAATAATT TTCCCTGGGC CTAGAGTGTG 420  
 130 CTATTATGGA GAACTGTGGG ATGGGGATG~~A~~ GGCTCATCCG CTTGTACCAAC CTTATAAGGT 480

CTGCGTGGAT CCTGCAGGCC CGGAAGGAGT CCCTGGGAGG GTGTTGGAAG AAACACTCCG 540  
5 GTGAGCCCGG CACTCTTCTA TGGAAATACTG TCTGGAACAT GGCGTTATC ACCCATTGTT 600  
ACGATTTCCG CGATTTCAG GTGGCTGCCT TTAAAGGTGA TGATTCGATA GTGCTTGCA 660  
GTGAGTACCG TCAGAGTCCA GGGGCTGCTG TCGTGTGTC TTAAAGCTGA 720  
10 AGGTGGGTTT CGTCCGATT GGTTGTATG CAGGTGTTGT GGTGACCCCC GGCCTTGGCG 780  
CGCTTCCCGA CGTCGTGCGC TTGTCCGGCC GGCTTAUTGA GAAGAATTGG GGCCCTGGCC 840  
CTGAGCGGGC GGAGCAGCTC CGCCTTGCTG TGCG 874

15 or a sequence complementary thereto.

4. A protein which is (a) immunoreactive with antibodies present in individuals infected with enterically transmitted nonA/nonB hepatitis and (b) derived from a viral hepatitis agent whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present in plasmid pTZXFl(ET1.1) carried in E. coli strain BB4, and having ATCC 25 Deposit Nno. 67717.'

5. The protein of claim 4, which is encoded by a coding region within said 1.33 kb EcoRI insert.

30 6. A protein which is (a) immunoreactive with antibodies present in individuals infected with enterically transmitted nonA/nonB hepatitis and (b) encoded by genetic sequence 406.3-2 or 406.4-2 or a fragment thereof.

35 7. A method of detecting infection by enterically transmitted nonA/nonB hepatitis viral agent in a test individual, comprising:  
providing a peptide antigen which is (a)  
40 immunoreactive with antibodies present in individuals infected with enterically transmitted nonA/nonB hepatitis and (b) derived from a viral hepatitis agent whose genome contains a region which is homologous to

the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4, and having ATCC deposit no. 67717,

5 reacting serum from the test individual with such antigen, and

examining the antigen for the presence of bound antibody.

8. The method of claim 7, wherein the serum antibody is an IgM or IgG antibody, or a mixture of both, the antigen provided is attached to a support, said reacting includes contacting such serum with the support and said examining includes reacting the support and bound serum antibody with a reporter-labeled anti-human antibody.

9. A kit for ascertaining the presence of serum antibodies which are diagnostic of enterically transmitted nonA/nonB hepatitis infection, comprising  
20 a support with surface-bound recombinant peptide antigen which is (a) immunoreactive with antibodies present in individuals infected with enterically transmitted nonA/nonB viral hepatitis agent and (b) derived from a viral hepatitis agent  
25 whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4, and having ATCC deposit no. 67717, and  
30 a reporter-labeled anti-human antibody.

10. A DNA fragment derived from an enterically transmitted nonA/nonB viral hepatitis agent whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4 and having ATCC deposit no. 67717.

11. The fragment of claim 10, which is derived from said 1.33 kb EcoRI insert.

12. A DNA molecule comprising genetic sequence 406.3-2 or 406.4-2 or a fragment thereof, wherein said 5 fragment comprises at least 12 consecutive nucleotides.

13. A DNA fragment derived from an enterically transmitted nonA/nonB viral hepatitis agent whose 10 genome contains a region which is homologous to a DNA fragment within a first sequence (SEQ ID NO.1):

	AGACCTGTCC CTGTTGCAGC TGTTCTACCA CCCTGCCCG AGCTCGAACAA GGGCCTTCTC	60
15	TACCTGCCCG AGGAGCTCAC CACCTGTGAT AGTGTGTAACATTGAATT AACAGACATT	120
	GTGCACTGCC GCATGGCCGC CCCGAGCCAG CGCAAGGCCG TGCTGTCCAC ACTCGTGGC	180
20	CGCTACGGCG GTCGCACAAA GCTCTACAAT GCTTCCCCT CTGATGTTCG CGACTCTCTC	240
	GCCCCTTTA TCCCCGCCAT TGGCCTCGTA CAGGTTACAA CTTGTGAATT GTACGAGCTA	300
	GTGGAGGCCA TGGTCGAGAA GGGCCAGGAT GGCTCCGCCG TCCTTGAGCT TGATCTTGC	360
25	AACCGTGACG TGTCCAGGAT CACCTTCTTC CAGAAAGATT GTAACAAGTT CACCACAGGT	420
	GAGACCATTG CCCATGGTAA AGTGGGCCAG GGCATCTCGG CCTGGAGCAA GACCTTCTGC	480
30	GCCCTCTTG GCCCTTGGTT CCGCGCTATT GAGAAGGCTA TTCTGGCCCT GCTCCCTCAG	540
	GGTGTGTTT ACGGTGATGC CTTTGATGAC ACCGTCTCT CGGCGGCTGT GGCGCAGCA	600
	AAGGCATCCA TGGTGTGTTGA GAATGACTTT TCTGAGTTG ACTCCACCCA GAATAACTTT	660
35	TCTCTGGGTC TAGAGTGTGC TATTATGGAG GAGTGTGGGA TGCCGCAGTG GCTCATCCGC	720
	CTGTATCACC TTATAAGGTC TGCCTGGATC TTGCAGGCC CGAAGGAGTC TCTGCGAGGG	780
40	TTTGGAAGA AACACTCCGG TGAGCCGGC ACTCTTCTAT GGAATACTGT CTGGAATATG	840
	GCCGTTATTA CCCACTGTTA TGACTTCCGC GATTTCAAGG TGGCTGCCTT TAAAGGTGAT	900
	GATTGATAG TGCTTGCAG TGAGTATCGT CAGAGTCCAG GAGCTGCTGT CCTGATGCC	960
45	GGCTGTGGCT TGAAGTTGAA GGTAGATTTC CGCCCGATCG GTTTGATGC AGGTGTTGTG	1020
	GTGGCCCCCG GCCTTGGCGC GCTCCCTGAT GTTGTGCGCT TCGCCGGCCG GCTTACCGAG	1080
50	AAGAATTGGG GCCCTGGCCC TGAGCGGGCG GAGCAGCTCC GCCTCGCTGT TAGTGATTTC	1140

CTCCGCAAGC TCACGAATGT AGCTCGAATG TGTGTGGATG TTGTTTCCCG TGTTTATGGG 1200  
 GTTTCCCCCTG GACTCGTTCA TAAACCTGATT GGCGATGCTAC AGGCTGTTGC TGATGGCAAG 1260  
 5 GCACATTCA CTGAGTCAGT AAAACCGAGTG CTCGA 1295  
 a second sequence (SEQ ID NO.5):  
 TCGAGCACTG GTTTTACTGA CTCAGTGAAA TGTGCCTTGC CATCAGCAAC AGCCTGTAGC 60  
 10 ATGCCAACATCA GGTTATGAAC GAGTCGAGGG GAAACCCCCAT AAACACGGGA AACAAACATCC 120  
 ACACACATCT GAGCTACATT CGTGAGCTTG CGGAGGAAAT CACTAACAGC GAGGCAGGAGC 180  
 15 TGCTCCGCCCG GCTCAGGGCC AGGGCCCCAA TTGTTCTCGG TAAGCCGGCC GGCGAAGCGC 240  
 ACAACATCAG GGAGCGCGCC AAGGCCGGG GCGACCCACAA CACCTGCATA CAAACCGATC 300  
 20 GGGCGGAAAT CTACCTTCAA CTTCAAGCCA CAGCCGGCGA TCAGGACAGC AGCTCCTGGA 360  
 CTCTGACGAT ACTCACTGCA AAGCACTATC GAATCATCAC CTTAAAGGC AGCCACCTGA 420  
 AAATCGCGGA AGTCATAACA GTGGGTATA ACGGCCATAT TCCAGACAGT ATTCCATAGA 480  
 25 AGAGTGCCGG GCTCACCGGA GTGTTCTTC CAAAACCCCTC GCAGAGACTC CTTGGGGCC 540  
 TGCAAGATCC ACGCAGACCT TATAAGGTGA TACAGGCCGA TGAGCCACTG CGGCATCCCA 600  
 CACTCCTCCA TAATAGCACA CTCTAGACCC AGAGAAAAGT TATTCTGGGT GGAGTCAAAC 660  
 30 TCAGAAAAGT CATTCTCAA CACCATGGAT GCCTTGCTG CGGCCACAGC CGCCGAGAAG 720  
 ACGGTGTCA CAAAGGCATC ACCGTAACAC ACACCCCTGAG GGAGCAGGGC CAGAATAGCC 780  
 35 TTCTCAATAG CGCGGAACCA AGGGCCAAAG AGGGCGCAGA AGGTCTTGCT CCAGGCCGAG 840  
 ATGCCCTGGC CCACTTACCT ATGGGCAATG GTCTCACCTG TGGTGAACCTT GTTACAATCT 900  
 TTCTGGAAGA AGGTGATCCT GGACACGTCA CGGTTGCAAAG GATCAAGCTC AAGGACGGCG 960  
 40 GAGCCATCCT GGCCCTTCTC GACCATGGCC TCCACTAGCT CGTACAATTCA ACAAGTTGTA 1020  
 ACCTGTACGG GGCCAATGGC CGGGATAAAA CGGGCGAGAG AGTCGCGAAC ATCAGAGTGG 1080  
 45 GAAGCATTGT AGAGCTTGT GCGACCCCG TAGCGGCCA CGAGTGTGGA CAGCACGGCC 1140  
 TTGCGCTGGC TCGGGGCGGC CATGCGCGAG TGACACAATGT CTGTTAATTCA AAATGTTACG 1200  
 ACACTATCAC AGGTGGTGAG CTCCCTGGGGC AGGTAGAGAA GGCCCTGTTC GAGCTCGGGG 1260  
 50 CAGGGTGGTA GAACAGCTGC AACAGGGACA GGTCT 1295  
 a third sequence (SEQ ID NO.6):  
 AGGCAGACCA CATATGTGGT CGATGCC ATGGAGGCC ATCAGTTTAT TAAGGCTCCT 57  
 55 GGCATCACTA CTGCTATTGA GCAGGCTGCT CTAGCAGCGG CCAACTCTGC CCTGGCGAAT 117

	GCTGTGGTAG TTAGGCGTTT TCTCTCTCAC CAGCAGATTG AGATCCTCAT TAACCTAATG	177
5	CAACCTCGCC AGCTTGTGAG GGGCGCGAG GTTTCTGGA ATCATCCCAT CCAGCGTGTC	237
	ATCCATAACG AGCTGGAGCT TTACTGCAGC GCGCGCTCG GCGCTGTCT TGAAATTGGC	297
	GCCCCATCCCC GCTCAATAAAA TGATAATCTT AATGTGGTCC ACCGCTGCTT CCTCCGCCCT	357
10	GTTGGGCGTG ATGTTAGCG CTGGTATACT GCTCCCACTC GCGGGCCGGC TGCTAATTGC	417
	CGGCGTTCCG CGCTGCGGG GCTTCCCGCT GCTGACCGCA CTTACTGCCT CGACGGGTTT	477
15	TCTGGCTGTA ACTTTCCCGC CGAGACTGGC ATCGCCCTCT ACTCCCTCA TGATATGTCA	537
	CCATCTGATG TCGCCGAGGC CATGTTCCGC CATGGTATGA CGCGGCTCTA TGCCGCCCTC	597
	CATCTTCCGC CTGAGGTCCT GCTGCCCTCT GGACATATAC GCACCGCATH GTATTTGCTA	657
20	ATTCATGACG TAGGGCGCGT TGTGGTGACG TATGAGGGTG ATACTAGTGC TGGTTACAAC	717
	CACGATGTCT CCAACTTGCCTG CTCTGGATT AGAACCAACCA AGGTTACCGG AGACCATCCC	777
25	CTCGTTATCG AGCGGGTAG GCCATTGGC TGCCACTTTG TTCTCTTGCT CACGGCAGCC	837
	CCGGAGCCAT CACCTATGCC TTATGTTCTT TACCCCGGT CTACCGAGGT CTATGTCCGA	897
	TCGATCTTCG GCCCGGGTGG CACCCCTTCC TTATTCCCAA CCTCATGCTC CACTAAGTCG	957
30	ACCTTCCATG CTGTCCTGC CCATATTGG GACCGTCTTA TGCTGTTGG GGCCACCTG	1017
	GATGACCAAG CCTTTTGCTG CTCTCGTTA ATGACCTACC TTCGCGGCAT TAGCTACAAG	1077
35	GTCACTGTTG GTACCCCTGT GGCTAATGAA GGCTGGAATG CCTCTGAGGA CGCCCTACA	1137
	GCTGTTATCA CTGCCGCCTA CCTTACCAATT TGCCACCAGC GGTATCTCCG CACCCAGGCT	1197
	ATATCCAAGG GGATGCGTCG TCTGAAACGG GAGCATGCC AGAAGTTTAAACACGCC	1257
40	TACAGCTGGC TCTTCGAGAA GTCCGGCGT GATTACATCC CTGGCCGTCA GTTGGAGTTC	1317
	TACGCCAGT GCAGGGCGTG GCTCTCCGCC GGCTTCATC TTGATCCACG GGTGTTGGTT	1377
45	TTTGACGAGT CGGCCCCCTG CCATTGTAGG ACCGCGATCC GTAAGGCCT CTCAAAGTTT	1437
	TGCTGCTTCA TGAAAGTGGCT TGGTCAGGAG TGACACTGCT TCCTTCAGCC TGCGAGAGC	1497
	GCCGTCGGCG ACCAGGGTCA TGATAATGAA GCCTATGAGG GGTCCGATGT TGACCCCTGCT	1557
50	GAGTCCGCCA TTAGTGACAT ATCTGGGTCC TATGTCGTCC CTGGCACTGC CCTCCAACCG	1617
	CTCTACCAAGG CCCTCGATCT CCCCGCTGAG ATTGTGGCTC GCGCGGGCCG GCTGACCC	1677
55	ACAGTAAAGG TCTCCAGGT CGATGGGCGG ATCGATTGCG AGACCCCTCT TGTTAACAAA	1737
	ACCTTCGCA CGTCGTTCGT TGACGGGGCG GTCTTAGAGA CCAATGGCCC AGAGCGCCAC	1797

	AATCTCTCCT	TGAGTGCAG	TGAGAGTACT	ATGGCCGCTG	GCCCTTCAG	TCTCACCTAT	1857
5		GCCGCCTCTG	CAGCTGGGT	GGAGGTGCG	TATTTGCTG	CCGGGCTTGA	CCATCGGGCG
	GT	TTTGCCC	CGGTGTTTC	ACCGGGCTCA	GCCCCGGCG	AGGTTACCGC	CTTCTGCTCT
	GCCCTATACA	GGTTAACCG	TGAGGCCAG	CGCCATTGCG	TGATCGGTAA	CTTATGGTTC	2037
10	CATCCTGAGG	GA	CTCATTTGG	CCTCTTGCG	CGGTTTGC	CCGGGCATGT	TTGGGAGTCG
	GCTAATCCAT	TCTGTGGCGA	GAGCACACTT	TACACCGTA	CTTGGTCGGA	GGTTGATGCC	2157
15	GT	CTCTAGTC	CAGCCGGCC	TGAGTTAGGT	TTTATGTCTG	AGCCTCTAT	ACCTAGTAGG
	GCCGCCACGC	CTACCCCTGGC	GGCCGCTCTA	CCCCCCCCCTG	CACCGGACCC	TTCCCCCCCCT	2277
	CC	CTCTGCC	GGGGCTTGC	TGAGCCGGCT	TCTGGCGCTA	CCGCGGGGGC	CCCGGCCATA
20	ACTCACCAGA	CGGCCCCGCA	CGGCCCCCTG	CTCTCACCT	ACCCGGATGG	CTCTAAGGTA	2397
	TTCGCCGGCT	CGCTGTTCGA	GTCGACATGC	ACGTGGCTCG	TTAACCGCGTC	TAATGTTGAC	2457
25	CACCGCCCTG	GCGGCGGGCT	TTGCCATGCA	TTTACCAAA	GGTACCCCGC	CTCCTTGAT	2517
	GCTGCCTCTT	TTGTGATGCG	CGACGGCGCG	GCCGCGTACA	CACTAACCCC	CCGGCCAATA	2577
	ATT	CACGCTG	TCGCCCCCTGA	TTAGGTTG	GAACATAACC	CAAAGAGGCT	TGAGGCTGCT
30	TATCGGGAAA	CTTGCTCCCG	CTCGGCACC	GCTGCATACC	CGCTCCTCGG	GACCGGCATA	2697
	TACCAAGGTGC	CGATCGGCC	CAGTTTGAC	GCCTGGGAGC	GGAACCACCG	CCCCGGGGAT	2757
35	GAGTTGTACC	TTCTGAGCT	TGCTGCCAGA	TGGTTTGAGG	CCAATAGGCC	GACCCGCCCG	2817
	ACTCTCACTA	TAACTGAGGA	TGTTGCACGG	ACAGCGAATC	TGGCCATCGA	GCTTGACTCA	2877
	GCCACAGATG	TGGGCCGGGC	CTG	TGCCGGC	TGTCGGGTCA	CCCCGGCGT	TGTTCA
40	CAGTTTACTG	CAGGTGTGCC	TGGATCCGGC	AAGTCCCCT	CTATCACCCA	AGCCGATGTG	2997
	GACGTTGTG	TGGTCCCAC	GCGTGAGTTG	CGTAATGCCT	GGCGCCGTG	CGGCTTGCT	3057
45	GCTTTACCC	CGCATACTGC	CGCCAGAGTC	ACCCAGGGGC	GCCGGGTTGT	CATTGATGAG	3117
	GCTCCATCCC	TCCCCCTCA	CCTGCTGCTG	CTCCACATGC	AGCGGGCCGC	CACCGTCCAC	3177
	CTTCTTGGCG	ACCCGAACCA	GATCCCAGCC	ATCGACTTTG	AGCACGCTGG	GCTCGTCCCC	3237
50	GCCATCAGGC	CCGACTTAGG	CCCCACCTCC	TGGTGGCATG	TTACCCATCG	CTGGCCTGCG	3297
	GATGTATGCG	AGCTCATCCG	TGGTGCATAC	CCCATGATCC	AGACCACTAG	CGGGGTTCTC	3357
55	CGTTCGTTGT	TCTGGGGTGA	GCCTGCCGTC	GGGCAGAAC	TAGTGTTCAC	CCAGGGCGCC	3417
	AAGCCCGCCA	ACCCGGGCTC	AGTGCAGGTC	CACGAGGC	AGGGCGCTAC	CTACACGGAG	3477

	ACCACTATTA TTGGCACAGC AGATGCCCGG GGCTTATTTC AGTCGTCTCG GGCTCATGCC	3537
5	ATTGTTGCTC TGACGCCGA CACTGAGAAG TGCGTCATCA TTGACGCACC AGGCCTGCTT	3597
	CGCGAGGTGG GCATCTCCGA TGCAATCGTT AATAACTTT TCCTCGCTGG TGGCGAAATT	3657
	GGTCACCAGC GCCCCATCA GT TATTCCCCGT GGCAACCCCTG ACGCCAATGT TGACACCCCTG	3717
10	GCTGCCTTCC CGCCGTCTTG CCAGATTAGT GCCTTCCATC AGTTGGCTGA GGAGCTTGGC	3777
	CACAGACCTG TCCCTGTGAGC AGCTGTTCTA CCACCCCTGCC CCGAGCTCGA ACAGGGCCTT	3837
15	CTCTACCTGC CCCAGGAGCT CACCACCTGT GATACTGTGTA AACATTGTA ATTAACAGAC	3897
	ATTGTGCACT GCCGCATGGC CGCCCCGAGC CAGCGCAAGG CCGTGCTGTC CACACTCGTG	3957
	GGCCGCTACG GCGGTCGAC AAAGCTCTAC AATGCTTCCC ACTCTGATGT TCGCGACTCT	4017
20	CTCGCCCCTT TTATCCCCGC CATTGGCCCC GTACAGTTA CAACTTGTGA ATTGTACGAG	4077
	CTAGTGGAGG CCATGGTCGA GAAGGGCCAG GATGGCTCCG CCGTCCTTGA GCTTGATCTT	4137
25	TGCAACCGTG ACGTGTCCAG GATCACCTTC TTCCAGAAAG ATTGTAACAA GTTCACCACA	4197
	GGTGAGACCA TTGCCCCATGG TAAAGTGGGC CAGGGCATCT CGGCCTGGAG CAAGACCTTC	4257
	TGCGCCCTCT TTGGCCCTTG GTTCCCGCCT ATTGAGAAGG CTATTCTGGC CCTGCTCCCT	4317
30	CAGGGTGTGT TTTACGGTGA TGCCTTGAT GACACCGTCT TCTCGGCCGGC TGTGGCCGCA	4377
	GCAAAGGCAT CCATGGTGT TGAGAACATGAC TTTTCTGAGT TTGACTCCAC CCAGAACAAAC	4437
35	TTTTCTCTGG GTCTAGAGTG TGCTATTATG GAGGAGTGTG GGATGCCGCA GTGGCTCATC	4497
	CGCCTGTATC ACCTTATAAG GTCTCGTGG ATCTGCAGG CCCCGAAGGA GTCTCTGCGA	4557
	GGGTTTTGGA AGAAACACTC CGGTGAGCCC GGCACCTTC TATGGAATAC TGTCTGGAAT	4617
40	ATGGCCGTTA TTACCCACTG TTATGACTTC CGCGATTTTC AGGTGGCTGC CTTTAAAGGT	4677
	GATGATTGCA TAGTGTGTTG CAGTGAGTAT CGTCAGAGTC CAGGAGCTGC TGTCCGTATC	4737
45	GCCGGCTGTG GCTTGAAGTT GAAGGTAGAT TTCCGCCCGA TCGGTTGTA TGCAGGTGTT	4797
	GTGGTGGCCC CGGGCCTTGG CGCGCTCCCT GATGTTGTGC GCTTCGCCGG CGGGCTTACC	4857
	GAGAAGAATT GGGGCCCTGG CCCTGAGCGG GCGGAGCAGC TCCGCCTCGC TGTTAGTGAT	4917
50	TTCCCTCCGCA AGCTCACGAA TGTAGCTCAG ATGTGTGTGG ATGTTGTTTC CCGTGTTCAT	4977
	GGGGTTTCCC CTGGACTCGT TCATAACCTG ATTGGCATGC TACAGGCTGT TGCTGATGGC	5037
55	AAGGCACATT TCACTGAGTC AGTAAAACCA GTGCTGACT TGACAAATTC AATCTTGTGT	5097
	CGGGTGGAAT GA ATAACATGTC TTTGCTGCG CCCATGGGTT CGCGACCATG	5149

	CGCCCTCGGC CTTATTTGTT GGTGGTCTC ATGTTTTGC CTATGCTGCC CGCGCCACCG	5209
5	CCCGGTCAGC CGTCTGGCG CGTGTGTTG CGGCGCAGCG GCGGTTCCGG CGGTGGTTTC	5269
	TGGGGTGACC GGGTTGATTG CGAGGTTTC GCAATCCCT ATATTCATCC AACCAACCCC	5329
	TTCGCCCCCG ATGTCACCGC TGCGGCCGG GCTGGACCTG GTGTCGCCA ACCCGCCCGA	5389
10	CCACTCGGCT CGCGTTGGCG TGACCGAGGC CAGCGCCCCG CCGTTGCCTC ACGTCGTAGA	5449
	CCTACACACAG CTGGGGCGC CGCGCTAA CGCGGTGCG TCCGGCCAT GACACCCCGC	5507
15	CAGTGCCTGA TGTGACTCC CGCGGGGCCA TCTTGCGCCG GCAGTATAAC CTATCAACAT	5567
	CTCCCCCTAC CTCTTCCGTG GCCACCGGCA CTAACCTGGT TCTTATGCC GCCCCCTTTA	5627
	GTCCGCTTT ACCCCTTCAG GACGGCACCA ATACCCATAT AATGGCCACG GAAGCTTCTA	5687
20	ATTATGCCCA GTACCGGGTT GCCCGTGCCA CAATCCGTTA CCGCCCGCTG GTCCCCAATG	5747
	CTGTCGGCGG TTACGCCATC TCCATCTCAT TCTGGCCACA GACCACCACC ACCCGACGT	5807
25	CCGTTGATAT GAATTCAATA ACCTCGACGG ATGTTCGTAT TTTAGTCCAG CCCGGCATAG	5867
	CCTCTGAGCT TGTGATCCA AGTGAGCGCC TACACTATCG TAACCAAGGC TGGCGCTCCG	5927
	TCGAGACCTC TGGGGTGGCT GAGGAGGAGG CTACCTCTGG TCTTGTATG CTTTGCATAC	5987
30	ATGGCTCACT CGTAAATTCC TATACTAATA CACCCCTATAC CGGTGCCCTC GGGCTGTTGG	6047
	ACTTTGCCCT TGAGCTTGAG TTTCGCAACC TTACCCCCGG TAACACCAAT ACGCGGGTCT	6107
35	CCCGTTATTG CAGCACTGCT CGC <del>C</del> ACCGCC TTGTCGGCG TGCGGACGGG ACTGCCGAGC	6167
	TCACCACAC GGCTGCTACC CGCTTATGA AGGACCTCTA TTTTACTAGT ACTAATGGTG	6227
	TCGGTGAGAT CGGCCGCGGG ATAGCCTCA CCCTGTTCAA CCTTGCTGAC ACTCTGCTTG	6287
40	GCGGCCTGCC GACAGAATTG ATTCGTCGG CTGGTGGCCA GCTGTTCTAC TCCCGTCCCG	6347
	TTGTCAGC CAATGGCGAG CCGACTGTTA AGTTGTATAC ATCTGTAGAG AATGCTCAGC	6407
45	AGGATAAGGG TATTGCAATC CCGCATGACA TTGACCTCGG AGAATCTCGT GTGGTTATTG	6467
	AGGATTATGA TAACCAACAT GAACAAGATC GGCGGACGCC TTCTCCAGCC CCATCGCGCC	6527
	CTTTCTCTGT CCTTCGAGCT AATGATGTG TTTGGCTCTC TCTCACCGCT GCCGAGTATG	6587
50	ACCAGTCCAC TTATGGCTCT TCGACTGGCC CAGTTTATGT TTCTGACTCT GTGACCTTGG	6647
	TTAATGTTGC GACCGGGCGCG CAGGCCGTTG CCCGGTCGCT CGATTGGACC AAGGTACACAC	6707
55	TTGACGGTCG CCCCCCTCTCC ACCATCCAGC AGTACTCGAA GACCTTCTTT GTCTGCCGC	6767
	TCCGCGGTAA GCTCTTTTC TGGGAGGCAG GCACAACTAA AGCCGGGTAC CCTTATAATT	6827

	ATAACACCAC TGCTAGCGAC CAACTGCTTG TCGAGAATGC CGCCGGGCAC CGGGTCGCTA	6887
5	TTTCCACTTA CACCACTAGC CTGGGTGCTG GTCCCGTCTC CATTCTGCG GTTGCCGTT	6947
	TAGCCCCCA CTGTGCGCTA GCATTGCTTG AGGATAACCTT GGACTACCCCT GCCCAGCGCCC	7007
10	ATACTTTGA TGATTTCTGC CCAGAGTSCC GCCCCCTTGG CCTTCAGGGC TGCGCTTTCC	7067
	AGTCTACTGT CGCTGAGCTT CAGCGCCTTA AGATGAAGGT GGGTAAAACG CGGGAGTTGT	7127
	AG TTTATTTGCT TGTGCCCGCC TTCTTTCTGT TGCTTATTTC TCATTTCTGC	7179
15	GTTCCCGCGCT CCCTGA	7195
	a fourth sequence (SEQ ID NO.10):	
	GCCATGGAGG CCCACCAAGTT CATTAAGGCT CCTGGCATCA CTACTGCTAT TGAGCAAGCA	60
20	GCTCTAGCAG CGGCCAACTC CGCCCTTGCAG AATGCTGTGG TGGTCCGGCC TTTCCTTTCC	120
	CATCAGCAGG TTGAGATCCT TATAAATCTC ATGCAACCTC GGCAAGCTGGT GTTTCGTCC	180
	GAGGTTTTTT GGAATCACCC GATTCAACGT GTTATACATA ATGAGCTTGA GCAGTATTGC	240
25	CGTGCTCGCT CGGGTCGCTG CCTTGAGATT GGAGCCCACC CACGCTCCAT TAATGATAAT	300
	CCTAATGTCC TCCATCGCTG CTTTCTCCAC CCCGTCGGCC GGGATGTTCA GCGCTGGTAC	360
30	ACAGCCCCGA CTAGGGGACC TGCAGCGAAC TGTCGCGCT CGGCACCTCG TGGTCTGCCA	420
	CCAGCCGACC GCACTTACTG TTTTGATGGC TTTGCCGGCT GCCGTTTTGC CGCCGAGACT	480
	GGTGTGGCTC TCTATTCTCT CCATGACTTG CAGCCGGCTG ATGTTGCCGA GGCGATGGCT	540
35	CGCCACGGCA TGACCCGCCT TTATGCAGCT TTCCACTTGC CTCCAGAGGT GCTCCTGCCT	600
	CCTGGCACCT ACCGGACATC ATCCTACTTG CTGATCCACG ATGGTAAGCG CGCGGTTGTC	660
40	ACTTATGAGG GTGACACTAG CGCCGGTTAC AATCATGATG TTGCCACCCCT CCGCACATGG	720
	ATCAGGACAA CTAAGGTTGT GGGTAAACAC CCTTTGGTGA TCGAGCGGGT GCGGGGTATT	780
	GGCTGTCACT TTGTGTTGTT GATCACTGCG GCCCCTGAGC CCTCCCCGAT GCCCTACGTT	840
45	CCTTACCCGC GTTCGACGGA GGTCTATGTC CGGTCTATCT TTGGGCCCGG CGGGTCCCCG	900
	TCGCTGTTCC CGACCGCTTG TGCTGTCAAG TCCACTTTTC ACGCCGTCCC CACGCACATC	960
	TGGGACCGTC TCATGCTCTT TGGGCCACC CTCGACGACC AGGCCTTTG CTGCTCCAGG	1020
50	CTTATGACGT ACCTTCGTGG CATTAGCTAT AAGGTAACGT TGGGTGCCCT GGTCGCTAAT	1080
	GAAGGCTGGA ATGCCACCGA GGATGCGCTC ACTGCAGTTA TTACGGCGGC TTACCTCACA	1140
55	ATATGTCATC AGCGTTATTG CGGGACCCAG GCGATTCTA AGGGCATGCG CGGGCTTGAG	1200

	CTTGAACATG CTCAGAAATT TATTTAACG CCTACASCT GGCTATTG A	GAAGTCAGGT	1260
	CGTGATTACA TCCCAGGCCG CCAGCTGAG TTCTACGCTC AGTGCCGCCG CTGGTTATCT		1320
5	GCCGGGTTCC ATCTCGACCC CGGCACCTTA GTTTTGATG AGTCAGTGCC TTGTAGCTGC		1380
	CGAACACCACCA TCCGGGGGAT CGCTGGAAAA TTTTGTGTT TTATGAAGTG GCTCGGTAG		1440
10	GAGTGTCTT GTTTCCTCCA GCCCGCCGAG GGGCTGGCGG GCGACCAAGG TCATGACAAT		1500
	GAGGCCTATG AAGGCTGTA TGTGATACT GCTGAGGCTG CCACCCCTAGA CATTACAGGC		1560
	TCATACATCG TGGATGGTCG GTCTGAA ACTGTCATC AAGCTCTCGA CCTGCCAGCT		1620
15	GACCTGGTAG CTGGCGCAGC CGGACTCTCT GCTACAGTTA CTGTTACTGA AACCTCTGGC		1680
	CGTCTGGATT GCCAAACAAT G TCGGCAAT AAGACTTTTC TCACTACCTT TGTTGATGGG		1740
20	GCACGCCCTG AGGTTAACGG GCCTGAGCAG CTTAACCTCT CTTTGACAG CCAGCAGTGT		1800
	AGTATGGCAG CGGGCCCGTT TTGCTCACCA TATGCTGCCG TAGATGGCGG GCTGGAAGTT		1860
	CATTTTCCA CCGCTGGCCT CGAGAGCCGT GTTGTGTTCC CCCCTGGTAA TGCCCCGACT		1920
25	GCCCCGCCGA GTGAGGTAC CGCCTCTGC TCAGCTCTT ATAGGCACAA CGGGCAGAGC		1980
	CAGCGCCAGT CGGTTATTGG TAGTTGTGG CTGCAACCTG AAGGTTTGCT CGGCCTGTT		2040
30	CCGCCCTTT CACCCGGGCA TGAGTGGCGG TCTGCTAACCC CATTGGCGG CGAGAGCACG		2100
	CTCTACACCC GCACTTGGTC CACAATTACA GACACACCCCT TAACTGTCGG GCTAATTCC		2160
	GGTCAATTGG ATGCTGCTCC CCACTGGGG GGGCCACCTG CTACTGCCAC AGGCCCTGCT		2220
35	GTAGGCTCGT CTGACTCTCC AGACCCCTGAC CGCCTACCTG ATGTTACAGA TGGCTCACGC		2280
	CCCTCTGGGG CCCGTCCGGC TGGCCCCAAC CGAAATGGCG TTCCGCAGCG CCGCTTACTA		2340
	CACACCTACC CTGACGGCGC TAAGATCTAT GTCGGCTCCA TTTTGAGTC TGAGTGCACC		2400
40	TGGCTTGTCA ACGCATCTAA CGCCGCCAC CGCCCTGGTG GCGGGCTTTG TCATGCTTT		2460
	TTTCAGCGTT ACCCTGATTG GTTGACGCC ACCAAGTTTG TGATGCGTGA TGGCTTGCC		2520
45	GCGTATAACCC TTACACCCCG GCGGATCATT CATGGGTGG CCCCCGACTA TCGATTGGAA		2580
	CATAACCCCA AGAGGCTCGA GGCTGCCTAC CGCGAGACTT GCGCCCGCCG AGGCACTGCT		2640
50	GCCTATCCAC TCTTAGGGCG TGGCATTAC CAGGTGCCTG TTAGTTGAG TTTTGATGCC		2700
	TGGGAGCGGA ACCACCGCCC GTTGACGAG CTTACCTAA CAGAGCTGGC GGCTCGGTGG		2760
	TTTGAATCCA ACCGGCCCCGG TCAGCCCCACG TTGAACATAA CTGAGGATAC CGCCCGTGC		2820
55	GCCAACCTGG CCCTGGAGCT TGACTCCGGG AGTGAAGTAG GCGCGCATG TGCCGGGTGT		2880

	AAAGTCGAGC CTGGCGTTGT GCGGTATCAG TTTACAGCCG GTGTCCCCGG CTCTGGCAAG	2940
	TCAAAGTCGG TGCAACAGGC GGATGTGGAT GTTGTGTTG TGCCCACTCG CGAGCTTCGG	3000
5	AACGCTTGGC GGCGCCGGGG CTTTGCGGCA TTCACTCCGC ACACTGCGGC CCGTGTCACT	3060
	AGCGGCCGTA GGTTGTCAT TGATGAGGCG CCTTCGCTCC CCCCACACTT GCTGCTTTA	3120
10	CATATGCAGC GTGCTGCATC TGTGCACGTC CTTGGGGACC CGAACATCAGAT CCCCCGCCATA	3180
	GATTTTGAGC ACACCGGTCT GATTCCAGCA ATACGGCCGG AGTTGGTCCC GACTTCATGG	3240
	TGGCATGTCA CCCACCGTTG CCCTGCAGAT GTCTGTGAGT TAGTCGTGG TGCTTACCT	3300
15	AAAATCCAGA CTACAAGTAA GGTGCTCCGT TCCCTTTCT GGGGAGAGCC AGCTGTCGGC	3360
	CAGAAGCTAG TGTCACACA GGCTGCTAAG GCCGCGCACCC CGGGATCTAT AACGGTCCAT	3420
20	GAGGCCAGG GTGCCACTTT TACCACTACA ACTATAATTG CAACTGCAGA TGCCCGTGGC	3480
	CTCATACAGT CCTCCCGGGC TCACGCTATA GTTGCTCTCA CTAGGCATAC TGAAAAATGT	3540
	GTTATACTTG ACTCTCCCGG CCTGTTGCGT GAGGTGGGTA TCTCAGATGC CATTGTTAAT	3600
25	AATTCTTCC TTTGGGTGG CGAGGTTGGT CACCAAGAGAC CATCGGTCA TCCGCGAGGC	3660
	AACCCCTGACC GCAATGTGA CGTGCTTGC GCGTTCCAC CTTCATGCCA AATAAGGCC	3720
30	TTCCATCAGC TTGCTGAGGA GCTGGGCCAC CGGCCGGCGC CGGTGGCGGC TGTGCTACCT	3780
	CCCTGCCCTG AGCTTGAGCA GGGCCTCTC TATCTGCCAC AGGAGCTAGC CTCCGTGAC	3840
	AGTGTGTGA CATTGAGCT AACTGACATT GTGCACTGCC GCATGGCGGC CCCTAGCCAA	3900
35	AGGAAAGCTG TTTGTCCAC GCTGGTAGGC CGGTATGGCA GACGCACAAG GCTTTATGAT	3960
	GCGGGTCACA CCGATGTCCG CGCCTCCCTT GCGCGTTTA TTCCCACCTCT CGGGCGGGTT	4020
40	ACTGCCACCA CCTGTGAACCT TTTGAGCTT GTAGAGGCGA TGGTGGAGAA GGGCCAAGAC	4080
	GGTTCAGCCG TCCTCGAGTT GGATTGTGC AGCCGAGATG TCTCCCGCAT AACCTTTTC	4140
	CAGAAGGATT GTAACAAGTT CACGACCGGC GAGACAATTG CGCATGGCAA AGTCGGTCAG	4200
45	GGTATCTTCC GCTGGAGTAA GACGTTTGT GCCCTGTTG GCCCCCTGGTT CGGTGCGATT	4260
	GAGAAGGCTA TTCTATCCCT TTTACCACAA GCTGTGTTCT ACGGGGATGC TTATGACGAC	4320
50	TCAGTATTCT CTGCTGCCGT GGCTGGCGCC AGCCATGCCA TGGTGTGTTA AAATGATTT	4380
	TCTGAGTTTG ACTCGACTCA GAATAACTTT TCCCTAGGTC TTGAGTGC CATTATGGAA	4440
	GAGTGTGGTA TGCCCCAGTG GCTTGTCAAGG TTGTACCATG CCGTCCGGTC GGCAGTGGATC	4500
55	CTGCAGGCC CAAAAGAGTC TTTGAGAGGG TTCTGGAAGA AGCATTCTGG TGAGCCGGC	4560

	AGCTTGCTCT	GGAATACGGT	GTGGAACATG	GCAATCATTG	CCCATTGCTA	TGAGTTCCGG	4620
	GACCTCCAGG	TTGCCGCCTT	CAAGGGCGAC	GACTCGGTG	TCCCTGTAG	TGAATACCGC	4680
5	CAGAGCCCCAG	GCGCCGGTTC	GCTTATAGCA	GGCTGTGGTT	TGAAGTTGAA	GGCTGACTTC	4740
	CGGCCGATTG	GGCTGTATGC	CGGGGTTGTC	GTGGCCCCGG	GGCTCGGGGC	CCTACCCGAT	4800
10	GTCGTTCGAT	TCGCCGGACG	GCTTCGGAG	AAGAACTGGG	GGCCTGATCC	GGAGCGGGCA	4860
	GAGCAGCTCC	GCCTGGCGT	CGAGGATTTC	CTCCGTAGGT	TAACGAATGT	GGCCAGATT	4920
	TGTGTTGAGG	TGGTGTCTAG	AGTTTACGGG	GTTCGGGG	GTCTGGTTCA	TAACCTGATA	4980
15	GGCATGCTCC	AGACTATTGG	TGATGGTAAG	GCGCATTAA	CAGAGTCTGT	TAAGCCTATA	5040
	CTTGACCTTA	CACACTCAAT	TATGCACCGG	TCTGAATGAA	TAACATGTGG	TTTGCTGCGC	5100
20	CCATGGGTTTC	GCCACCATGC	GCCCTAGGCC	TCTTTGCTG	TTGTTCTCT	TGTTCTGCC	5160
	TATGTTGCC	GCGCCACCGA	CCGGTCAGCC	GTCTGGCCGC	CGTCGTGGGC	GGCGCAGCGG	5220
	CGGTACCGGC	GGTGGTTCT	GGGGTGACCG	GGTGATTCT	CAGCCCTTCG	CAATCCCCTA	5280
25	TATTCATCCA	ACCAACCCCT	TTGCCCGAGA	CGTTGCCGCT	CGGTCCGGGT	CTGGACCTCG	5340
	CCTTCGCCAA	CCAGCCCCGC	CACTTGGCTC	CACTTGGCGA	GATCAGGCC	AGCGCCCCTC	5400
30	CGCTGCCTCC	CGTCGCCGAC	CTGCCACAGC	CGGGGCTGCG	GCGCTGACGG	CTGTGGCGCC	5460
	TGCCCATGAC	ACCTCACCCG	TCCCGGACGT	TGATTCTCGC	GGTGAATTTC	TACGCCGCCA	5520
	GTATAATTG	TCTACTTCAC	CCGTGACATC	CTCTGTGGCC	TCTGGCACTA	ATTTAGTCCT	5580
35	GTATGCAGCC	CCCCTTAATC	CGCCTCTGCC	GTCAGGAC	GGTACTAATA	CTCACATTAT	5640
	GGCCACAGAG	GCCTCCAATT	ATGCACAGTA	CCGGGTTGCC	CGCGCTACTA	TCCGTTACCG	5700
40	GCCCCTAGTG	CCTAATGCAG	TTGGAGGCTA	TGCTATATCC	ATTTCTTCT	GGCCTCAAAC	5760
	AACCACAACC	CCTACATCTG	TTGACATGAA	TTCCATTACT	TCCACTGATG	TCAGGATTCT	5820
	TGTTCAACCT	GGCATAGCAT	CTGAATTGGT	CATCCAAGC	GAGCGCCTTC	ACTACCGCAA	5880
45	TCAAGGTTGG	CGCTCGGTTG	AGACATCTGG	TGTTGCTGAG	GAGGAAGCCA	CCTCCGGTCT	5940
	TGTCAATGTTA	TGCATACATG	GCTCTCCAGT	TAACTCCTAT	ACCAATACCC	CTTATACCGG	6000
50	TGCCCTTGGC	TTACTGGACT	TTGCCCTAGA	GCTTGAGTT	CGCAATCTCA	CCACCTGTAA	6060
	CACCAATACA	CGTGTGTCCC	GTTACTCCAG	CACTGCTCGT	CACTCCGCC	GAGGGGCCGA	6120
	CGGGACTGCG	GAGCTGACCA	CAACTGCAGC	CACCAAGGTT	ATGAAAGATC	TCCACTTAC	6180
55	CGGCCTTAAT	GGGGTAGGTG	AAGTCGGCCG	CGGGATAGCT	CTAACATTAC	TTAACCTTGC	6240

	TGACACGCTC	CTCGGGGGC	TCCCAGACAGA	ATTAATTTCG	TCGGCTGGCG	GGCAACTGTT	6300
	TTATTCCCGC	CCGGTTGTCT	CAGCCAATGG	CGAGCCAACC	GTGAAGCTCT	ATACATCAGT	6360
5	GGAGAACGCT	CAGCAGGATA	AGGGTGTG	TATCCCCAC	GATATCGATC	TTGGTGATTC	6420
	GCCTGTGGTC	ATTCAGGATT	ATGACAACCA	GCATGAGCAG	GATCGGCCCA	CCCCGTCGCC	6480
10	TGCGCCATCT	CGGGCTTTT	CTGTTCTCG	AGCAAATGAT	GTACTTGGC	TGTCCCTCAC	6540
	TGCAGCCGAG	TATGACCAAGT	CCACTAACGG	GTCGTCAACT	GGCCCGGTTT	ATATCTCGGA	6600
	CAGCGTGACT	TTGGTGAATG	TTGCAGCTGG	CGCGCAGGCC	GTAGCCCGAT	CGCTTGACTG	6660
15	GTCCAAAGTC	ACCCCTCGACG	GGCGGCCCT	CCCGACTGTT	GAGCAATATT	CCAAGACATT	6720
	CTTTGTGCTC	CCCCTTCGTG	GCAAGCTCTC	CTTTGGGAG	GCCGGCACAA	CAAAAGCAGG	6780
20	TTATCCTTAT	AATTATAATA	CTACTGCTAG	TGACCAGATT	CTGATTGAAA	ATGCTGCCGG	6840
	CCATCGGGTC	GCCATTTCAA	CCTATACAC	CAGGCTTGGG	GCCGGTCCGG	TCGCCATTTC	6900
	TGCGGCCGCG	GTGGGGCTC	CACGCTCCGC	CCTGGCTCTG	CTGGAGGATA	CTTTGATTA	6960
25	TCCGGGGCGG	GCGCACACAT	TTGATGACTT	CTGCCCTGAA	TGCCGCGCTT	TAGGCCTCCA	7020
	GGGTTGTGCT	TTCCAGTCAA	CTGTCGCTGA	GCTCCAGCGC	CTTAAAGTTA	AGGTGGGTAA	7080
	AACTCGGGAG	TTGTAGTTA	TTGGCTGTG	CCCACCTACT	TATATCTGCT	GATTTCTTT	7140
30	ATTTCTTTT	TCTCGGTCCC	GCGCTCCCTG	A			7171
	or a fifth sequence (SEQ ID NO.12):						
35	CGGGCCCCGT	ACAGGTACA	ACCTGTGAGT	TGTACGAGCT	AGTGGAGGCC	ATGGTCGAGA	60
	AAGGCCAGGA	TGGCTCCGCC	GTCCTTGAGC	TCGATCTCTG	CAACCGTGAC	GTGTCCAGGA	120
	TCACCTTTTT	CCAGAAAGAT	TGCAATAAGT	TCACCACGGG	AGAGACCATE	GCCCATGGTA	180
40	AAGTGGGCCA	GGGCATTTCG	GCCTGGAGTA	AGACCTCTG	TGCCCTTTTC	GGCCCCCTGGT	240
	TCCGTGCTAT	TGAGAAGGCT	ATTCTGGCCC	TGCTCCCTCA	GGGTGTGTTT	TATGGGGATG	300
	CCTTTGATGA	CACCGTCTTC	TCGGCGCGTG	TGGCCGCAGC	AAAGGCGTCC	ATGGTGTGTTG	360
45	AGAATGACTT	TTCTGAGTTT	GACTCCACCC	AGAATAATT	TTCCCTGGGC	CTAGAGTGTG	420
	CTATTATGGA	GAAGTGTGGG	ATGCCGAAGT	GGCTCATCCG	CTTGTACAC	CTTATAAGGT	480
50	CTGCGTGGAT	CCTGCAGGCC	CCGAAGGAGT	CCCTGCGAGG	GTGTTGGAAG	AAACACTCCG	540
	GTGAGCCCGG	CACTCTCTA	TGGAATACTG	TCTGGAACAT	GGCCGTTATC	ACCCATTGTT	600
	ACGATTTCCG	CGATTTGCAG	GTGGCTGCT	TTAAAGGTGA	TGATTGATA	GTGCTTGCA	660
55	GTGAGTACCG	TCAGAGTCCA	GGGGCTGCTG	TCCTGATTGC	TGGCTGTGGC	TTAAAGCTGA	720

AGGTGGGTTT CGGTCCGATT GGTTTATG CAGGTGTTGT GGTGACCCCCC GGCTTGGCG 780  
5 CGCTTCCCGA CGTCGTGCAC TTGTCCGGCC GGCTTACTGA GAAGAATTGG GGCCCTGGCC 840  
CTGAGCGGGC GGAGCAGCTC CGCCTTGCG TGCG 874

or a sequence complementary thereto.

10 14. A kit comprising, in a container or separate containers, a pair of single-strand primers derived from nonhomologous regions of opposite strands of a DNA duplex fragment derived from an enterically transmitted viral hepatitis agent whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4 and having ATCC deposit no. 67717.

20 15. The kit of claim 15, which are derived from opposite strands of the EcoRI duplex insert in said plasmid.

25 16. A method for detecting the presence of an enterically transmitted nonA/nonB hepatitis viral agent in a biological sample, comprising preparing a mixture of duplex DNA fragments derived from the sample,  
30 denaturing the duplex fragments,  
adding to the denatured DNA fragments, a pair of single-strand primers derived from nonhomologous regions of opposite strands of a DNA duplex fragment derived from an enterically transmitted viral hepatitis agent whose genome contains a region which  
35 is homologous to the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4, and having ATCC deposit no. 67717,  
hybridizing said primers to homologous-sequence region of opposite strands of such duplex DNA

fragments derived from enterically transmitted nonA/nonB hepatitis agent,

reacting the primed fragment strands with DNA polymerase in the presence of DNA nucleotides, to form  
5 new DNA duplexes containing the primer sequences, and repeating said denaturing, adding, hybridizing and reacting steps, until a desired degree of amplification of sequences is achieved.

10 17. The method of claim 16, wherein the primers are derived from opposite strands of the EcoRI duplex insert in said plasmid.

15 18. The method of claim 16, for detecting the presence of viral agent in a sample of cultured cells infected with the agent.

20 19. A vaccine for immunizing an individual against enterically transmitted nonA/nonB hepatitis viral agent comprising, in a pharmacologically acceptable adjuvant, a recombinant protein derived from an enterically transmitted nonA/nonB viral hepatitis agent whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present  
25 in plasmid pTZ-Rf1(ET1.1) carried in E. coli strain BB4, and having ATCC deposit no. 67717.

30 20. The vaccine of claim 19, wherein the protein is derived from the EcoRI insert in said plasmid.

35 21. A vaccine for immunizing an individual against HEV comprising, in a pharmacologically acceptable adjuvant, a protein encoded by genetic sequence 406.3-2 or 406.4-2 or a fragment thereof.

22. In a method of isolating an enterically transmitted nonA/nonB viral agent or a nucleic acid fragment produced by the agent, an improvement which

comprises: utilizing, as a source of said agent, bile obtained from a human or cynomolgus monkey having an active infection of enterically transmitted non-A/non-B hepatitis.

5

23. The method of claim 22, wherein the bile is obtained from an infected cynomolgus monkey.

24. Human polyclonal anti-serum obtained from a  
10 human immunized with a protein derived form an enterically transmitted non-A/non-B viral hepatitis agent whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4  
15 and having ATCC deposit no. 67717.

HPT  
P.M.